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Investigation of Angiostensin-converting enzyme inhibitory potential and allergenicity of Sesamum indicum Linn seed proteins by an in silico approach (LB541)

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Abstract

The nutraceutical role of dietary proteins and peptides is gaining considerable interest in the management of cardiovascular disease like hypertension. In order to investigate the contribution of *Sesamum indicum* seed proteins to its antihypertensive properties was investigated, there seed protein sequences: 7S globulin (NCBI accession number, gi|13183177), 2S albumin (NCBI accession number, gi|13183174) and 11S globulin (NCBI accession number, gi|13183172) were selected for BLAST, BIOPEP and allergenicity analysis. BLAST gave the following similarities: 7S globulin vs rice glutelin precursor (35%), 7S globulin vs oat 12S seed storage globulin 1 (29%), 11S globulin vs rice glutelin precursor (41%), 11S globulin vs oat 12S seed storage globulin 1 (39%) and 2S albumin vs

oat 12S seed storage globulin 1 (60%). BIOPEP analysis showed that the sesame proteins demonstrated either di- or tri-peptide with a total of 92, 91 and 34 potential ACE inhibitory peptides from 7S globulin, 2S albumin and 11S globulin, respectively. Papain hydrolysis theoretically released the highest numbers of predicted ACE inhibitory peptides (23, 14 and 5) from 7S globulin, 2S albumin and 11S globulin, respectively. The 8-mer and 80-mer allergenicity analysis of these proteins showed significant matches with allergenic proteins from *Lens culinaris*, *Anacardium occidentale*, *Carya illinoinensis*. Although, the ccombined digestion with pepsin, trypsin and chymotrypsin A, a simulation of human gastrointestinal digestion, gave a sum of 32 predicted ACE inhibitory peptides from these proteins, their allergenic property may be a limitation.

We recommend

4. Hoping to Break Mass Spec Data Bottleneck, Proteomics Turns to Reconfigurable Hardware

   GenomeWeb, 2005

5. Downloads and Upgrades: NCBI Resource Pages and Updates to UCSC Genome Browser

   GenomeWeb, 2014

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